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L-22-246

10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject:
Beaver Valley Power Station, Unit Nos. 1 and 2
Docket No. 50-334, License No. DPR-66
Docket No. 50-412, License No. NPF-73
Response to Request for Additional Information Regarding a Request to Consolidate
Fuel Decay Time Technical Specifications to New LCO (EPID No. L-2022-LLA-0071)

By letter dated May 16, 2022 (Accession No. ML22137A049), Energy Harbor Nuclear Corp. requested Nuclear Regulatory Commission (NRC) approval for a license amendment request (LAR). The LAR revises Beaver Valley Power Station, Unit 1 and 2 Technical Specifications (TS) to add a Limiting Condition for Operation (LCO) titled "Decay Time" restricting movement involving fuel or over fuel that has occupied part of a critical reactor core within the previous 100 hours. The current TS restrictions on fuel movement involving fuel that has occupied part of a critical reactor core within the previous 100 hours appear in the applicability statements and conditions of several TS LCOs. The proposed LAR would consolidate those restrictions in the new LCO.

By email dated November 8, 2022, the NRC staff requested additional information regarding the Beaver Valley LAR. The Energy Harbor Nuclear Corp. response to the November 8, 2022, NRC request is attached.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Phil H. Lashley, Manager, Fleet Licensing, at (330) 696-7208.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 7, 2022.

Sincerely,

John J. Grabnar

Attachment:

Response to Request for Additional Information

cc: NRC Region I Administrator
NRC Resident Inspector
NRR Project Manager
Director BRP/DEP
Site BRP/DEP Representative

Response to Request for Additional Information
Page 1 of 4

By letter dated May 16, 2022, Energy Harbor Nuclear Corp. submitted a license amendment request (LAR) for Nuclear Regulatory Commission (NRC) review and approval. By email dated November 8, 2022, NRC staff requested additional information to complete its review. The request for additional information is presented below in bold type and is followed by the Energy Harbor Nuclear Corp. response.

Regulatory Basis

Criterion 3 of Title 10 of the *Code of Federal Regulations*, part 50.36(c)(2)(ii)(C) states a technical specification limiting condition for operation of a nuclear reactor must be established for a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The prohibition of fuel movements involving recently irradiated fuel (fuel that has occupied part of a critical reactor core within the previous 100 hours), as required by the fuel handling analysis, appears in the applicability statements of TS [Technical Specification] 3.3.7, "Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation," and TS 3.3.11, "Control Room Emergency Air Cooling System (CREACS)."

Request for Additional Information

SCPB RAI-01:

The proposed LCO [Limiting Condition of Operation] 3.7.11, "Control Room Emergency Air Cooling System (CREACS)," requires two CREACS trains be operable.

LCO 3.7.11

Two CREACS trains shall be OPERABLE.

- NOTE -

For Unit 1, the heat removal function of CREACS is not required OPERABLE to support fuel movement involving irradiated fuel assemblies.

APPLICABILITY:

**MODES 1, 2, 3, and 4,
During movement of irradiated fuel assemblies (Unit 1),
During movement of fuel assemblies over irradiated fuel assemblies (Unit 1)
~~During movement of recently irradiated fuel assemblies (Unit 2),~~
~~During movement of fuel assemblies over recently irradiated fuel assemblies (Unit 2).~~**

Section 2.1 of Attachment 1 to the LAR describes that the function of the CREACS is to provide (1) a control room heat removal function following isolation of the control room, and (2) control room atmosphere purge capability for the combined units' main control room.

The staff has reviewed the proposed LCO 3.7.11, and request the licensee to clarify the following:

1) Section 2.1 of Attachment 1 to the LAR states that

Control room isolation, ..., the control room heat removal function of CREACS, is not credited for either unit for an FHA... in MODES 5 and 6... As such, the heat removal function of CREACS is not required in MODES 5 and 6 or during fuel movement involving non-recently irradiated fuel.

However, the NOTE in LCO 3.7.11 states that for Unit 1 only, the heat removal function of CREACS is not required OPERABLE to support fuel movement involving irradiated fuel assemblies. It is not clear whether the heat removal function of Unit 2 is required, or not. The licensee is requested to clarify the applicability of this NOTE for Unit 2.

Further, if the heat removal function were required for Unit 2, the APPLICABILITY of LCO 3.7.11 should have included Unit 2 for its heat removal function.

Response:

The NOTE for LCO 3.7.11 is not applicable for Unit 2. Neither the CREACS heat removal function nor the CREACS atmosphere purge capability is required following a fuel handling accident (FHA) at Unit 2. While the CREACS heat removal function is also not required following a FHA at Unit 1, the atmosphere purge capability is required for Unit 1 to support fuel movement involving irradiated fuel to limit dose.

2) The APPLICABILITY of this TS includes the following:

- a) MODES 1, 2, 3, and 4**
- b) During movement of irradiated fuel assemblies (Unit 1)**
- c) During movement of fuel assemblies over irradiated fuel assemblies (Unit 1)**

Applicability (b) and (c) are for Unit 1 only. Section 2.1 of Attachment 1 to the LAR indicates that control room ventilation purge is required for Unit 1 FHA analysis but is not credited for Unit 2 FHA analysis. The licensee is requested to provide applicable UFSAR [Updated Final Safety Analysis Report] sections,

previous amendment, or referenced analysis to demonstrate that Unit 2 FHA analysis has not taken credit of CREACS control room atmosphere purge.

Response:

Section 15.7.4 of the Unit 2 UFSAR describes the radiological consequence of a FHA, including accident-specific control room model assumptions, with no mention of a control room purge. In UFSAR Chapter 15, radiological consequences of each of the design basis accidents (DBA) were analyzed. Resulting doses to main control room personnel due to DBAs are presented in Table 15.0-13, "Control Room Doses (TEDE) From Design Basis Accidents." Note 5 of the table indicates the control room is purged for a main steam line break and a steam generator tube rupture. Note 5 is not applied to the FHA.

On September 23, 2020 (Accession No. ML20213A731), the NRC staff issued Amendments 305 and 195 for Unit 1 and Unit 2, respectively. By letter dated October 21, 2020 (Accession No. ML20285A266), the NRC staff issued a correction to the safety evaluation (SE) for these amendments. Section 3.1.7 of the SE provides a discussion of a FHA. Data and assumptions for a FHA are presented in Table 11 in Section 5 of the SE. In Table 11, a control room purge is credited for Unit 1 only. No control room purge is credited for Unit 2.

A control room purge is required for a Unit 1 FHA because the prevailing weather patterns at the BVPS site carry radionuclide releases from Unit 1 towards the common control room, while such releases from a Unit 2 FHA are carried away from the common control room.

These documents demonstrate that Unit 2 FHA analysis has not taken credit for CREACS control room atmosphere purge.

SCP B RAI-02:

The APPLICABILITY of current TS 3.3.7, "Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation," specifies several ESFAS [Engineered Safety Feature Actuation System] signals for the CREVS actuation. Containment Isolation – Phase B (CIB) is one of those signals to actuate CREVS. Function 3 in Table 3.3.7-1 for CIB is removed in the proposed TS 3.3.7.

Section 3.0 of Attachment 1 (page 16 of 41) to the LAR relating to "TS 3.3.7 CREVS provides the following justifications for the removal of this actuation signal from the current TS APPLICABILITY requirements.

Containment Isolation – Phase B

Table 3.3.7-1 Item 3, Containment Isolation – Phase B (CIB), is proposed for deletion. Currently, Table 3.3.7-1 lists CIB as part of the

CREVS Actuation Instrumentation but does not list any requirements for the instrumentation. Instead, the Table 3.3.7-1 entry appears to be for information only and simply states: *Refer to LCO 3.3.2, “ESFAS Instrumentation,” Function 3.b, for all initiation functions and requirements.* References to LCO 3.3.2 for the CIB appear in the TS Bases. As such, there is no need to repeat this information in the TS LCO.

In Modes 1 through 4, the LOCA accident analysis assumes an automatic Control Room Ventilation System isolation on a CIB signal and subsequent manual initiation of a CREVS fan for filtered makeup and pressurization of the control room. As stated in Table 3.3.7-1, the Operability requirements for CIB, in Modes 1 through 4, are specified in LCO 3.3.2, “Engineered Safety Feature Actuation System (ESFAS).”

The staff reviewed LCO 3.3.2 Function 3.b and found no mention of CREVS Actuation Instrumentation. It is not clear how operability is addressed to ensure automatic Control Room Ventilation System isolation on CIB signal. The licensee is requested to provide additional justifications for deleting Function 3 for CIB from TS 3.3.7. Specifically, the licensee is requested to explain how LCO 3.3.2 Function 3.b addresses CREVS Actuation Instrumentation.

Response:

ESFAS instrumentation is segmented into three distinct but interconnected modules, one of which is the Solid State Protection System (SSPS). The SSPS equipment is used for the decision logic processing of inputs from field contacts, control board switches, and the signal processing equipment bistables. If a required logic matrix combination is completed, the system will send actuation signals via master and slave relays to those components whose aggregate function best serves to alleviate the condition and restore the unit to a safe condition.

CREVS is one of the systems receiving a signal from SSPS slave relays, which places it under Function 3.b(2), Automatic Actuation Logic and Actuation Relays, in Table 3.3.2-1. Surveillance Requirement (SR) 3.3.2.2, SR 3.3.2.3, and SR 3.3.2.6 address operability for this function in Modes 1, 2, 3, and 4. Site operating surveillance tests remain in place to satisfy these SRs. Therefore, operability requirements for CIB in Modes 1 through 4 remain unchanged.

The proposed removal of Table 3.3.7.1 Item 3 does not modify or remove any requirements associated with CIB actuation.